SD Instruments

SR-LAB™

SDI Startle Response System

"Designed by Scientists for Scientists"

Over 20 years of use in scientific research • More published studies than any other startle system

SR-LAB™ Startle Response

SR-LAB test station

The SR-LAB™ Startle Response System – the world's most widely used system for startle reflex measurement and by far the most successful for fear potentiated startle and pre-pulse inhibition testing. SR-LAB provides a complete hardware and software solution for a wide variety of startle applications. The system can be configured with up to 16 stations for testing large subject groups. Intuitive yet powerful features cater to users from the educated non-specialist to the sophisticated behaviorist.

SR-LAB takes full advantage of the Windows® operating system with data organization and management software that combines power and flexibility with ease of use. SR-LAB software controls virtually any combination of tones, noise bursts, lights, air puffs, background noise and foot shock options. Flexible data organization and management software provides the ability to configure multiple test stations, allowing rapid testing of a large number of subjects. Importantly, SR-LAB supports multiple test paradigms without requiring costly add-on kits or additional software.

The SR-LAB™ Startle Response System is the world's most widely used startle system and by far the best for testing startle habituation and pre-pulse inhibition.

Features & Benefits

- Supports all startle paradigms including startle habituation, pre-pulse and cross-modal inhibition, fear potentiated startle, trace conditioning and gap detection
- Configure up to 16 test stations for rapid testing of large subject groups
- Easy to use software controls all test paradigms
- Plug-in kits for shock, puretone, airpuff and light stimuli
- Results are reported in millivolts, which is a direct read and not a derived figure such as Newtons
- 5 standard animal enclosures with custom styles available
- Analysis module to review scored data, raw data and export data

The SR-LAB basic components include:

- Test cabinet in composite (ABS))
- Animal enclosure in choice of standard sizes
- Power supply
- Input and Output cables
- Software and User Manual
- Software utilities for data analysis

SR-LAB Control Unit Front & Back

Other, optional components and accessories can be added to the basic SR-LAB system including air puff, light prepulse kit, high intensity light kit, shocker, and extra animal enclosures information, please refer to the section on SR-LAB Optional Components.

SR-LAB SYSTEM CONTROL UNIT

The SR-LAB Control Unit consists of a computer with USB port, connection chassis and software. The Control Unit manages stimuli and monitors responses for up to 16 test stations simultaneously. All Control Unit operations are available from intuitive, menu-driven choices. The Control Unit displays each animal's response on the screen and records the response on the hard disk following every trial.

ISOLATION CABINETS

The SR-LAB ABS test cabinet is uniquely designed to permit accurate results in startle reflex testing by limiting inter-subject ultrasonic vocalizations and fear-related pheromones. Each sturdy cabinet permits full and unobtrusive observation of test animals and includes a ventilation fan, light, and viewing lenses. In addition, each cabinet contains a complete sound generation system for white noise production and accessory connections for optional stimuli. Electronic circuitry is enclosed in a separate section of the cabinet. The SR-LAB ABS cabinets are easy to clean.

ANIMAL ENCLOSURES

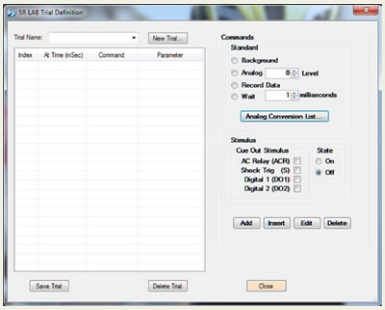
Animal enclosures are designed to locate the subject without using restraint so the animals do not suffer from restraint stress and confound the results of the startle testing. The animal is free to turn around and make other movements. The SR-LAB enclosures are configured to focus the source of stimuli on the animal's center line assuring the level of the stimuli is consistent. The SR-LAB cylindrical animal enclosure monitors animal movements with a closely coupled accelerometer sensor. The tubular design of the animal enclosure ensures that the animal remains centered over the sensor for consistently reliable results. Other systems with a square animal enclosure permit the animal to be off-center which affects the consistency of the response. The enclosures are made of transparent acrylic for easy cleaning and convenient observation. All enclosures are adjustable in length and come in five different sizes to accommodate adult and juvenile rats and mice— Small, Small/Medium, Medium, Large and X-Large. Also available are slotted enclosures for tethered animals in the same sizes except Small.

SR-LAB Animal Enclosures

SR-LAB™ Software Features

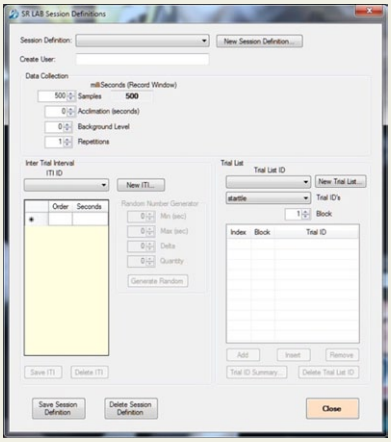
TEST PREPARATION

Trial Definitions – you can define a trial to meet your specific needs. Each command in a trial is selectable by checking a button and entering any parameter values. Choose Add, Insert, Edit or Delete to complete the entry of a command. You can control the start time and the duration of each command in the trial. All Trial Definitions can be saved and reused.



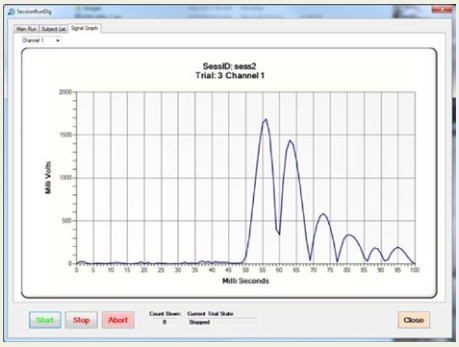
Session Definitions – The Session Definition assembles the following items to provide a cohesive run definition:

- Data Collection Parameters - Acclimation Time, Number of Samples to be recorded and Repetitions
- Trial List – constructed using the Add, Insert, and Remove buttons or loading a Saved Trial List.
- Inter-trial Interval(ITI) List - constructed using the Random Number Generator or manually entering time values in the list or loading a saved ITI List listed in the ITI ID list box. ITI lists can be saved for reuse in other Session Definitions.The Session Definition is saved for use in Test Execution.

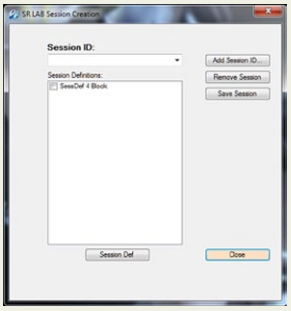


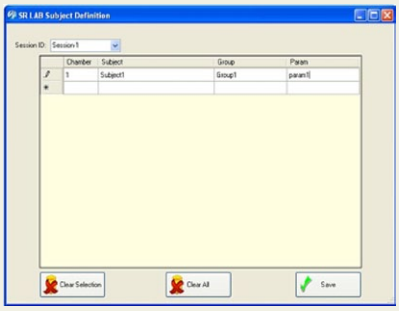
TEST EXECUTION

Diagnostics/Audio Calibration – you can observe response channel integrity and calibrate acoustic stimulus amplitudes directly from the Oscilloscope mode reducing the preparation time needed to establish stimulus levels in startle sessions.



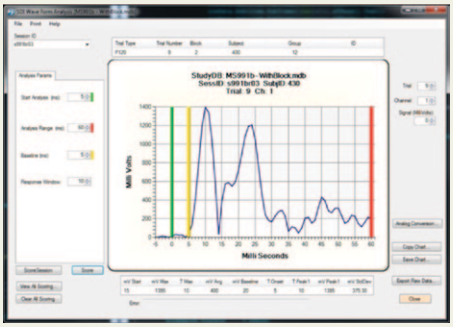
Running a Test - Assign a Session ID and select the Session Definition. Enter Subject information.





ANALYSIS

This is a separate module that can be installed on multiple computers to analyze and/or export results. All data collected by the SR-LAB software is stored in a database file in table format. This eliminates the need to concatenate individual files prior to export. With the Analysis module simply select the session you wish to view or export. There are also parameters to re-score a portion of the collected data.



CALIBRATION OF SR-LAB TEST CABINETS

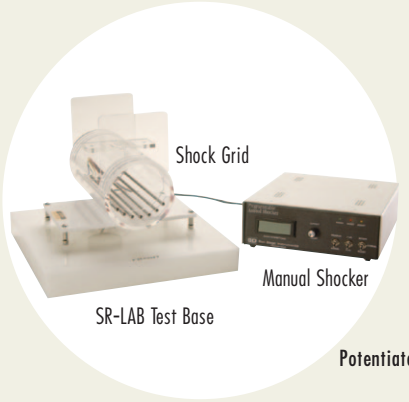
SR-LAB Standardization Unit – the SR-LAB Standardization Unit confirms the reliability of all startle animal enclosures; both among enclosures and over time, by transmitting a precise series of pulses to the sensor located on each enclosure. Using the SR-LAB Standardization Unit, you can adjust each animal enclosure to the same base line value, thus standardizing the responses. This unit is required for any SR-LAB multi-station system.

The SR-LAB software contains menu selections to help you plan, execute, and manage data in your startle response testing sessions.

"The SR-LAB Startle Response System from SDI has worked for us for many years, both as a measure of acoustic startle and pre-pulse inhibition."

Eastern U.S. Government Research Lab

SR-LAB™
Plug-in Kits and Accessories



Potentiated Startle Response Kit

A variety of optional system components can be added to your SR-LAB system at any time. The options include: the Potentiated Startle Response Kit, the Tactile Kit (air puff stimuli), the Light Kit for pre-pulse stimuli, the High Intensity Light Kit and the Shock Level Tester.

POTENTIATED STARTLE RESPONSE KIT

The SR-LAB Potentiated Startle Response Kit pairs foot shock with a conditioning stimulus for potentiated startle studies. The conditioning stimulus can be acoustic, light, tactile or user-supplied. The shocker's display shows the actual amplitude delivered. The stainless steel shock grid floor slides easily into the enclosure and is removable for cleaning.

The Potentiated Startle Response Kit is available for all enclosure sizes and includes:

- Animal Shocker – solid state, constant current, feedback controlled
- Shock Grid
- Cue Light
- All cables and connectors

AIR PUFF KIT

The Air Puff Kit is used as an alternative stimulus to the built in acoustic stimulus. Each Air Puff Kit consists of solenoid control box to turn the air on and off and a delivery nozzle which mounts on the top of the animal enclosure. An opening in the back of the SR-LAB cabinet is used to feed the tubing to the delivery nozzle.

- Solenoid Box
- Tubing
- Air Delivery Nozzle

RELAY CHASSIS

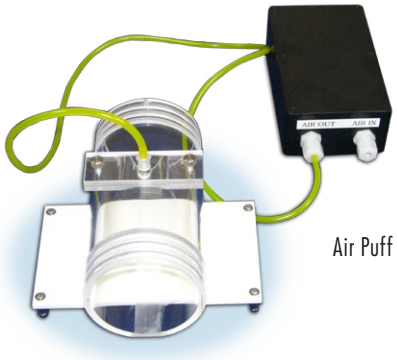
The SR-LAB Relay Chassis makes it possible to control lights, acoustic devices and other 12 VDC stimulus devices from the "Dig" command in the SR-LAB Trial Definition application. The Relay Chassis contains four solid-state relays that receive communication from the Digital lines built into the control unit.

HIGH INTENSITY LIGHT KIT

The SR-LAB High Intensity Light Kit can be used to induce anxiety in test animals. The light kit uses LEDs that emit 25 to 1500 lumens of light in the SR-LAB cabinet. The high intensity LED's do not generate heat or electrical noise that could influence an animal's reaction. This kit can be connected to either the Cue Out connector on each test station or a Lights Distribution Box if the Cue Out connector is occupied by another kit.

LED LIGHT KIT

The PPI LED Light Kit serves as an additional pre-pulse stimulus. It attaches to the top of the animal enclosure. This kit can be connected to either the Cue Out connector on each test station or a Lights Distribution Box if the Cue Out connector is occupied by another kit.



Air Puff Kit

PURE TONE KIT

The Pure Tone Kit consists of a speaker for each test station and audio amplifier for each four test stations. Generation of the pure tone is done using an external program to create a .wav file. This .wav file is then played at the appropriate time in a trial by the SR-LAB software to deliver a tone. Any frequency/frequencies and wave form supported by the computer sound card can be used. The supplied speaker has an upper limit of 90 KHz.

Pure Tone Kit

SHOCK LEVEL TESTER

The SR-LAB Shock Level Tester displays whether or not the shock grid is working properly. Just clip the Shock Level Tester on to a shock grid and set the appropriate shock level on the shocker. The shock level detected will be displayed on the LCD read out and on the SR-LAB Shock Level Tester. You will know that the shock grid is working properly when the shock level entered matches the value displayed on the LCD of the Shock Level Tester.

SR-LAB™ System Specifications

Dimensions	ABS Isolation Cabinet - 15" (W) x 14" (D) x 18" (H) Control Box - 16" (W) x 14" (D) x 5 ¾" (H) Small Animal Enclosure - 3 ½" (L) x 1.1" (ID) Small/Medium Animal Enclosure - 5" (L) x 1 ½" (ID) Medium Animal Enclosure - 6" (L) x 2 ¼" (ID) Large Animal Enclosure - 8" (L) x 3 ½" (ID) X-Large Animal Enclosure- 10" (L) x 5" (ID) Small/Medium Slotted Animal Enclosure - 5" (L) x 1 ½" (ID) Large Slotted Animal Enclosure- 8" (L) x 3 ½" (ID)
Weight	24 lbs. (Isolation Cabinet), 3 lbs. (Control Box)
Material Composition	Isolation Cabinet: ABS plastic Control Box: Plastic, Animal Enclosure: Acrylic
Maximum # Stations	16 stations per computer
Standard Cable Lengths	8 ft.
Certifications	CE
Stimuli Options	Tones, noise bursts, background noise, lights, air puffs, foot shocks and user-defined stimuli
Color Options	White

Power. Flexibility. Ease of Use

SR-LAB COMPUTER REQUIREMENTS

Windows 7 compatible computer system (desktop or laptop) with available USB port. Minimum disk and memory sizes specified to support Windows 7 are acceptable.

SDI CONFIGURED COMPUTERS

SDI offers high performance Cobalt™ Configured Computers that are pre-installed with the Windows® operating system and applicable SDI software. If required, SDI will pre-install all relevant drivers. Each computer is fully tested with your system prior to shipment. When your SDI system arrives, all you have to do is unpack it, attach the cables and begin testing

SDI STARTLE RESPONSE TEST SYSTEMS

- SR-LAB™
- SR-HLAB™

FOR MORE INFORMATION

To learn more about SDI behavioral testing systems, please visit **www.sandiegoinstruments.com.** If you have any questions or would like to request a quote please call **(858) 530-2600** or email us at **sales@sandiegoinstuments.com.**

To view the online SR-LAB overview presentation, please visit: **sandiegoinstruments.com/presentations.**

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